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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/623,150	07/18/2003	Anne Marie Heegaard	59573(46865)	5193

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EXAMINER	
GARVEY, TARA L	
ART UNIT	PAPER NUMBER
1636	

DATE MAILED: 09/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/623,150	HEEGAARD ET AL.	
	Examiner	Art Unit	
	Tara L. Garvey	1636	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on *22 June 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *9,11,18,21-23 and 27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *9* is/are allowed.

6)☒ Claim(s) *11,18,21-23 and 27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claims 9, 11, 18, 21-23 and 27 are pending. Receipt is acknowledged of an amendment filed on June 22, 2006 in which claims 10 and 24-26 were canceled and claims 9, 11, 18, 21 and 22 were amended.

Response to Amendment

Claim Objections

The objection of claims 18 and 26 is withdrawn in view of applicant's amendment.

Claim Rejections - 35 USC § 102

The rejection of claims 9, 18 and 23 under 35 U.S.C. 102(b) as being anticipated by Aromataris et al (British Journal of Pharmacology (1999) volume 126, pages 1375-1382) is withdrawn in view of applicant's amendment.

The rejection of claims 9, 18 and 23 under 35 U.S.C. 102(a) as being anticipated by Pusch et al (Molecular Pharmacology (2000) volume 58(3), pages 498-507) is withdrawn in view of applicant's amendment.

Claim Rejections - 35 USC § 112

The rejection of claim 9-11, 19, 20 and 24-26 under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement is withdrawn in view of applicant's amendment.

The rejection of claim 9 under 35 U.S.C. 112, second paragraph is withdrawn in view of applicant's amendment.

Double Patenting

The potential objection of claims 18, 23, 24 and 27 under 37 CFR 1.75 as being a substantial duplicate thereof is withdrawn in view of applicant's amendment.

Response to Arguments

Applicant's arguments filed June 22, 2006 have been fully considered but they are not fully persuasive.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 18, 21-23 and 27 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement for reasons of record as set forth in the office action mailed February 22, 2006. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Applicant argues that (1) the specification has demonstrated production of HEK293 cell lines that individually express a chloride channel such as CIC-3, CIC-6 or

CIC-7 and these type of cell lines can be used to determine if a compound can selectively block CIC-7 and not the other chloride channels. (2) The examiner has gone beyond what the claimed invention should properly be requiring. Since the claims are directed to methods of for screening, they should be understood as relating to the identification of compounds that have an increased likelihood of being suitable for use in treatment of an osteoclast disorder. Further, the inventors have demonstrated the expression of CIC-7 in osteoclasts and osteoclasts have to secrete an acidic enviroment to achieve resorption. Therefore, it highly likely that compounds that interfere with chloride transport will modulate bone resorption. The specification does not assert that every compound that can block CIC-7 will be useful in treatment, but rather the purpose of the claimed invention was to identify compounds that are worth further investigation for treatment. (3) The rejection with regard to lack of evidence of a role of CIC family channel members other than CIC-7 in osteoclast disorders is moot in view of an amendment directing the claims to only CIC-7. Further, the burden of experimentation in connection with compounds that block CIC-7 is not large and to determine if the identified compound may be of therapeutic value would only involve routine tasks of exposing osteoclasts to the relevant compound in a bone resorption assay of a known kind by suitable *in vivo* testing. Applicant's further argue that an article by Schaller et al demonstrates that a compound identifiable using screening methods as described in the specification has in vivo effect in rats in modulating osteclast activity resulting in the prevention of bone loss. Therefore, this paper verified the predictive teaching of the current application.

In response to applicant's arguments, (1) the examiner agrees that compounds that selectively block one channel can be identified. (2) The claims are directed to a screening method to identify compounds for the treatment in an osteoclast disorder, but the applicant has not demonstrated that the screening method works to identify even one compound with potential activity to treat any osteoclast-related disorder. Further, the compound screening assay is conducted in the human embryonic kidney cell line HEK293 cells that recombinantly express ClC-7 and are not related to an osteoclast. Additionally, the applicants have not demonstrated that any osteoclast disorder will be affected by blocking ClC-7. In particular, osteopetrosis results from a defect in ClC-7 that results in its reduced activity and increased bone mass. Therefore, it unclear how a compound that blocks ClC-7 will serve as a potential compound for the treatment of osteopetrosis. Further, in terms of Paget's disease and oncolytic cancer invasion the specification has no provided evidence on how a compound that blocks ClC-7 and modulates bone resorption will result in a treatment for these diseases. (3) The rejection with regard to the other ClC family members is moot due to the applicant's amendment to direct the invention only to ClC-7. The experimentation to determine the ability of compounds to treat any osteoclast-related bone disease is not routine experimentation. The testing would encompass using a valid animal model for every osteoclast-related disorder. Schaller et al demonstrates analysis of the chloride channel inhibitor NS3736 for its ability to inhibit chloride conductance in differentiated osteoclasts and its ability to inhibit bone resorption *in vitro* and in the OVX rat model. Schaller et al further determines which chloride channel may be inhibited by the

NS3637 compound by expression pattern analysis of CIC-7 and CLIC1. The expression of CIC-7 on osteoclasts suggests that NS3736 may inhibit CIC-7. Schaller et al does not teach identifying compounds for the treatment of osteoporosis by screening compounds specifically for their ability to block CIC-7 and do not directly demonstrate that NS3736 blocks CIC-7. Therefore, the methods taught by Schaller et al do not teach the steps claimed by the applicant to screen for potential compounds that block CIC-7 and treat osteoclast-related bone disease.

Claims 18, 21-23 and 27 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement for reasons of record as set forth in the office action mailed February 22, 2006 and above.

New Grounds of Rejection

These new rejections were necessitated by applicant's amendment.

Claim Objections

Claim 23 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. The claim directed to measuring the ability of compounds to block one or more chloride channels and is dependent on claim 18 which limits the chloride channel to CIC-7.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 11 recites the limitation "wherein the osteoclast bone disease" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim 23 recites the limitation "one or more chloride channels of the CIC family" in lines 3, 5 and 6. There is insufficient antecedent basis for this limitation in the claim. In particular, the independent claim 18 has been limited to the ability of compounds to block CIC-7 only.

Allowable Subject Matter

Claim 9 is allowed.

Conclusion

Claim 9 is allowed. Claims 11, 18, 21-23 and 27 are rejected.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tara L Garvey whose telephone number is (571) 272-2917. The examiner can normally be reached on Monday through Friday 8 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Remy Yucel can be reached on (571) 272-0781. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to (571) 272-0547.

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Tara L Garvey, Ph.D.
Examiner
Art Unit 1636

TLG

CELINE QIAN, PH.D.
PRIMARY EXAMINER